Strategic Research

Program Profile

To succeed in its national security mission, Los Alamos National Laboratory relies upon a broad scientific foundation. The Strategic Research Directorate provides technical solutions to challenges in national security through basic and applied science in several areas — materials, energy, environment an dcivilian infrastructure analysis. Materials research includes nanoscience, material theory and advanced materials. The energy focus includes work in high-temperature superconductivity, fuel cells, carbon management, nuclear energy technologies and the National Lighting Initiative. The environmental focus incorporates work in complex natural systems modeling (climate, freshwater, ocean and carbon), carbon sequestration and green chemistry. The civilian infrastructure analysis involves modeling and simulation activities activities related to the security of civilian communications, financial, energy, transportation, water and health systems.

Since 1943, Los Alamos has created and applied advanced science and technology to solve critical challenges in national defense and civilian research.

Materials

- **Nanoscience**—Research into microscopic particles will lead to new materials, new kinds of lasers and possibly even new cures for disease.
- **Quantum information and computing**—A field that may lead to new computers far faster than today's supercomputers.

Energy

- **High-Temperature Superconductivity Center**—Conducting research that could revolutionize electrical equipment and power transmission by decreasing electrical resistance to almost zero.
- **Fuel cell research**—May lead to devices that replace less-efficient batteries.
- **Carbon management**—Advancing electrical energy production with zero carbon emissions and land-based carbon sequestration.

Environment

- **Global climate and ocean modeling**—A world leader in ocean models that can predict climate changes.
- **Wildfire modeling**—FIRETEC wildfire computer model simulates a wide range of forest and wildland fires.
- **Remediation of the Cold War environmental legacy**—Cleaning up and restoring contaminated sites.

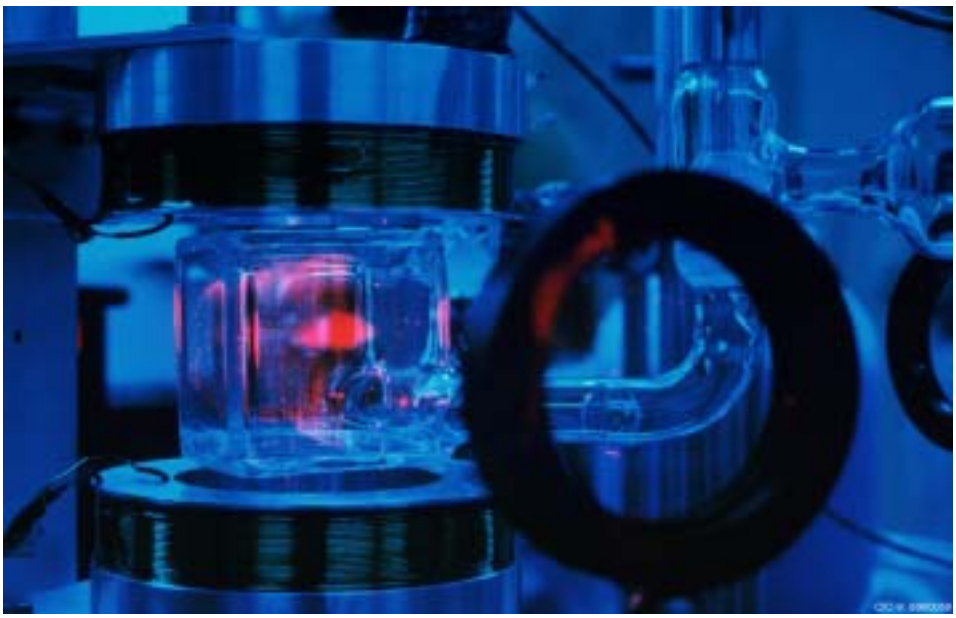
Civilian Infrastructure Protection

- **Novel sensors and detectors**—*R&D 100*-winning technology that identifies chemical compounds in sealed containers.
- **Genomics**—Pioneered the Human Genome Project; continue to unravel the mysteries of the genome.
- **Epidemics—**Los Alamos researchers traced the origin of the AIDS virus to the 1930s.

Quick Facts

What is Strategic Research?

- Four technical divisions: Chemistry, Earth and Environmental Science, Materials Science and Technology, and Theoretical.
- Two program offices: Energy and Sustainable Systems and Industrial Business Development—act as the Laboratory's customer interface with the non-defense parts of the Department of Energy, the Office of Science, and with private industry and civilian Federal agencies other than NASA.



Time-orbiting potential magnetic trap, a tool used for various environmental and nonproliferation applications

Staff

- Approximately 2,000 staff; includes more than 1,600 scientists, engineers, post-doctoral fellows, and students.
- Maintains most of the Laboratory's collaborations with scientists at universities, industrial firms, other government laboratories and international research centers.
- Hosts the largest share of the Laboratory's Fellows, long-term visiting scientists, and distinguished post-doctoral, doctoral and graduate students.
- Generates approximately 90 percent of the Laboratory's intellectual property (e.g., patents and licenses).

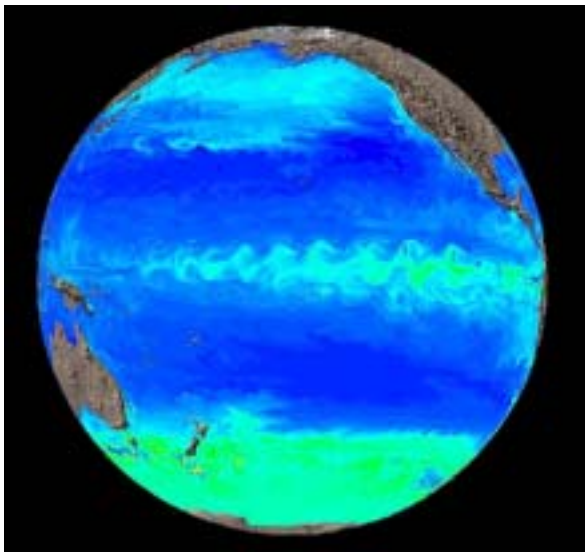
Budget and Funding Sources

- Annual budget of $300 million.
- Budget sources: $140 million from the Laboratory's nuclear weapons programs; the remaining budget comes from DOE Offices of Science and Environmental Management, and many other federal agencies including the National Institutes of Health, the National Science Foundation and the Department of Defense.

Scientific User Facilities

- Strategic Research operates the National High Magnetic Field Laboratory, the National Flow Cytometry Resource and the Stable Isotope Resource, all available for use by qualified members of the national and international science community.

Biomedical research in the new genomic era will increasingly focus on DNA sequence-level variation among individuals.



The Los Alamos Parallel Ocean Program of global cholorphyll distributions.

Los Alamos NATIONAL LABORATORY

Los Alamos National Laboratory is operated by the University of California for the U.S. Department of Energy's National Nuclear Security Administration

Associate Laboratory Director for Strategic Research Thomas J. Meyer
www.lanl.gov/orgs/ssr/
Communications Todd Hanson tahanson@lanl.gov

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